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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,451	06/23/2003	Chris Lee Stewart	02-553	9776

7590 12/13/2004
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EXAMINER

GIMIE, MAHMOUD

ART UNIT PAPER NUMBER

3747

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,451

Applicant(s)

STEWART ET AL.

Examiner

Mahmoud Gimie

Art Unit

3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Art Unit: 3747

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Shafer et al (6,725,838)

Shafer discloses method [of] injecting fuel, comprising the steps of: injecting fuel in a first spray pattern at least in part by energizing one of a plurality of electrical actuators (532, 542'), relieving fuel pressure in a first needle control chamber (620) and moving a first needle valve member (617) in a direction with respect to a second needle valve member (607); and injecting fuel in a second spray pattern at least in part by energizing a different one (542') of said plurality of electrical actuators (532, 542'), relieving fuel pressure in a second needle control chamber (610) and moving [a] the second needle valve member (607) in said direction within and with respect to said first needle valve member (617).

With regard to claim 2, said direction is inward into the injector.

Art Unit: 3747

With regard to claim 3, one of said first injecting step and said second injecting step is performed when an engine piston is closer to a bottom dead center position than a top dead center position; and an other of said first injecting step and said second injecting step is performed when said engine piston is closer to a top dead center position than a bottom dead center position.

With regard to claim 4, said injecting steps are performed in the same engine cycle.

With regard to claim 5, said first spray pattern corresponds to a homogeneous charge spray pattern with a small average angle elative to a centerline, and r said second spray pattern corresponds to a conventional spray pattern with a large average angle relative to said centerline.

With regard to claim 6, said first injecting step includes moving a first needle control valve member from contact with a first seat to contact with a second seat; and said second injecting step includes a moving a second needle control valve member from contact with a first seat to contact with a second seat.

With regard to claim 7, said first injecting step includes a step of closing a fluid connection between a nozzle supply passage and said first needle control chamber; and said second injecting step includes a step of closing a fluid connection between said nozzle supply passage and said second needle control chamber.

With regard to claim 8-20, see above and figures 1-18c.

Response to Arguments

3. Applicants' arguments filed on 11/18/04 have been fully considered but they are not persuasive. Applicants argue Shafer et al. also teaches a fuel injector in figures 12-15 that does not include nested needle valve members. However, Applicants' claimed methodology can not be read upon this fuel injector or its method of operation since there is no described version of the Shafer et al. figures 12 fuel injector that allows for fuel injection in two different spray patterns by relieving pressure in two different needle control chambers, via respective electrical actuators as in Applicants' claimed invention. With this regard, Shafer et al. discloses fuel injector (530', 530") that allows for fuel injection in two different spray patterns (626, 628) by relieving pressure in two different needle control chambers (610, 620), via respective electrical actuators (542', 532) as in Applicants' claimed invention.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

Art Unit: 3747

the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahmoud Gimie whose telephone number is 703-305-1037. The examiner can normally be reached on Tuesday-Friday between 7 a.m. -3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on 703-308-1946. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 12/9/04

MAHMOUD GIMIE
PRIMARY PATENT EXAMINER
ART UNIT 3747

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